



# Sixth Form Preparation for Success

## Welcome to Applied Science

AQA Applied science Specification Code 1775

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### Introduction

This qualification will prepare you to take up study the application science and scientific principles either directly in the work place or via higher education.

Studying this qualification will enable you to develop your knowledge and understanding of scientific principles, as well as those scientific practical skills recognised by higher

education institutions and employers to be most important. The qualification also offers you an opportunity to develop transferable skills such as problem solving, research and communication as part of their applied learning.

You will cover topics such as:

- scientific principles associated with biology, chemistry and physics.
- experimental and practical techniques associated with applied science.
- the roles and skills of scientists, and the public and media perception of science.
- how the human body works.
- scientific investigations.

The work that is detailed below will help you prepare for the content you need for the exam as well as practicing your research skills that are needed for the assignments.

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## **Part I – Y11 into 12 Applied Science Specific Bridging Work**

### **To be completed May – Sept**

Remember that prizes will be awarded for 'exceptional' work that demonstrates effort above expected!

#### **a) Investigate places of interest**

1. Are there any Science based businesses in your area? A big ask, but one that could be really beneficial to you, write them a letter explaining that you are taking Level 3 Applied Science and you want to see how Scientific processes are used in industry and you would like to visit / have some work experience. You never know this could lead to great things.

2. You could also try contacting your nearest university to see if they are running any summer schools for science related courses – they are usually free and give you the opportunity to experience the laboratories in a university.

3. Science museums. You could visit your nearest science museum. They often have special exhibitions that may be of interest to you.

[https://en.wikipedia.org/wiki/List\\_of\\_science\\_museums#United\\_Kingdom](https://en.wikipedia.org/wiki/List_of_science_museums#United_Kingdom)

Try the Manchester museum of science & industry <https://www.msimanchester.org.uk/>

4. The UK Association for Science and Discovery Centres (ASDC)

This association brings together over 60 major science engagement organisations in the UK.

<http://sciencecentres.org.uk/centres/weblinks.php>

5. The award-winning National Space Centre is an out of this world experience.

<https://spacecentre.co.uk/>

6. The UK Association for Science and Discovery Centres (ASDC)

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## b) Wider reading

**The Science of Everyday Life: Why Teapots Dribble, Toast Burns and Light Bulbs Shine** - Marty Jopson

**Bad Science** - Ben Goldacre

**The pleasure of finding things out** – Richard Feynman

**A brief history of nearly everything** – Bill Bryson

**Storm in a Teacup: The Physics of Everyday Life** - Helen Czerski

### **Videos to watch online:**

A bit of Biology, Chemistry and Physics for Applied Science unit 1 watch all the videos.  
[https://www.youtube.com/watch?v=8llzKri08kk&list=PLw5cQfZoOTCQTmTDBU-zl\\_hi5NRi8wISN](https://www.youtube.com/watch?v=8llzKri08kk&list=PLw5cQfZoOTCQTmTDBU-zl_hi5NRi8wISN)

## c) Compulsory task

The table shows the topics and skills you will cover

Unit 1: Key Concepts in Science	Unit 2: Applied Experimental Techniques
1a: Cell structure	1b: The Hill reaction
1b: Transport mechanisms	
1c: The heart	1a: Rate of respiration
1d: Homeostasis	1a: Rate of respiration
1e: Breathing / Cell respiration	1a: Rate of respiration
1f: Photosynthesis / Food chains	1b: The Hill reaction
2a: Atomic structure	2a: Volumetric analysis / 2b: Colorimetry
2b: Periodic Table	2a: Volumetric analysis / 2b: Colorimetry
2c: Amount of substance	2a: Volumetric analysis

2d: Bonding and structure	2b: Colorimetry
2e: Enthalpy	2a: Volumetric analysis
3a: Useful energy and efficiency	3b: Specific heat capacity
3b: Electricity and circuits	3a: Resistivity
3c: Dynamics	

## **Tasks to do**

### **Task 1:**

In preparation for your work in biology explain what the Hill Reaction is.

What are the limiting factors and how can investigate their effect?

Using equipment available in school plan how you would carry out the investigation.

### **Task 2:**

In preparation for your work in biology find a diagram of the heart. Label all the parts and state what they do.

Describe how lifestyle choices can affect heart function and explain what medical treatments are available to correct or assist heart problems.

### **Task 3:**

In preparation for your work in chemistry describe the structure of the atom. Explain what the advantages and disadvantages of the Bohr Model are. Describe the structure of the periodic table and explain how it is linked to atomic structure

### **Task 4**

In preparation for your work in chemistry explain what Colorimetry is, how it works and why it is a useful analytical technique in chemistry. Suggest some real-world practical applications for the technique.

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### **Task 5**

In preparation for your work in physics explain how heat is transferred through different materials. Define specific heat capacity and explain how you could experimentally determine the specific heat capacity of aluminum and water using equipment available in school. Explain what the real-world applications and uses of specific heat capacity are.

### **Task 6**

In preparation for your work in physics explain what resistance is and how it affects current flow. Explain what resistivity is and how it is different to resistance. Explain how you could experimentally determine the resistivity of a Nichrome wire using equipment available in school. Explain what the real-world applications and uses of resistivity are.

### **d) Stretch!**

Explain what Risk Assessments are and how they are useful and essential when engaged in a scientific work and employment. Describe the structure of risk assessments. Find examples of a variety of risk assessments used, evaluate the structure of each. You need to have a clear understanding of risk assessments as you must have one with each of the assignments that you complete.

## **Part II - Year 12 Head Start! for completion June – September**

To get a head start and prepare for your work in September the following links to resources will help you to prepare.

- a) The course specification is useful to look at how you will be assessed, when assessment opportunities are and the subject content you will learn.

<https://filestore.aqa.org.uk/resources/science/specifications/AQA-1775-SP-2016.PDF>

- b) The following link is to the AQA published schemes of work. They are user friendly. You will receive a teaching calendar in September. For September you only need to be aware of units 1 and 2.

<https://www.aqa.org.uk/subjects/science/applied-general/science/teaching-resources>

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- c) Whilst there are no published text books or revision guides the following links show recommended reading for unit 1 (Y12) and unit 4 (Y13)

<https://filestore.aqa.org.uk/resources/science/AQA-17751-RL-T.PDF>

<https://filestore.aqa.org.uk/resources/science/AQA-17754-RL-T.PDF>

- d) These Youtube links provide a useful introduction to the course content

[https://www.youtube.com/watch?v=8llzKri08kk&list=PLw5cQfZoOTCQTmTDBU-zl\\_hi5NRi8wISN](https://www.youtube.com/watch?v=8llzKri08kk&list=PLw5cQfZoOTCQTmTDBU-zl_hi5NRi8wISN)

<https://www.youtube.com/watch?v=PNZV862SN6Q&list=PL7zD1h5ZnFjPXffq149OR0L8xT2vAInUI>